ACC.15
TCT@ACC-i2 | innovation in intervention

A593
JACC March 17, 2015
Volume 65, Issue 10S

FIT Clinical Decision Making

PATENT DUCTUS ARTERIOSUS: DON'T THROW FLOW UNDER THE BUS

Oral Contributions
Room 9
Sunday, March 15, 2015, 9:00 a.m.-9:20 a.m.

Session Title: FIT Forum: Stump the Professor
Abstract Category: Pulmonary Hypertension and Pulmonary Thrombo-embolic Disease
Presentation Number: 903-10

Authors: *Ankur Fadia, Geoffrey Jao, Timothy Ball, Virginia Tech-Carilion School of Medicine and Research Institute, Roanoke, VA, USA*

Background: Uncorrected patent ductus arteriosus (PDA) can cause irreversible pulmonary hypertension (PH) with development of Eisenmenger syndrome. Balloon occlusion establishes reversible PH. If balloon occlusion is impractical, vasodilator challenge with inhaled nitric oxide (INO) can demonstrate reversible PH and candidacy for PDA closure if pulmonary artery pressure (PAP) and pulmonary vascular resistance (PVR) fall. However, in large PDA, INO causes pulmonary vasodilation, increases left-to-right shunt flow, and maintains elevated PAP and PVR. Since PAP and PVR appear fixed, these patients may incorrectly be classified with irreversible PH and unsuitable for PDA closure.

Case: A 39-year-old Hispanic woman complained of dyspnea with minimal exertion. Precordial palpation revealed a thrill. S2 was split with an accentuated P2, and a grade 4/6 continuous murmur was heard in the left infraclavicular region. There was no cyanosis or clubbing. Transthoracic echocardiogram revealed a large PDA and severe PH with a PAP of 140.7 mmHg.

Decision Making: The patient underwent right and left heart catheterization with unsuccessful PDA balloon occlusion due to its large size and flow. INO caused minimal reduction in PAP and PVR, consistent with fixed PH. However, pulmonary artery oxygen saturation increased from 89.6% to 98.4%, equal to systemic oxygen saturation. This suggested increased shunt flow and reversible PH. A 16 mm Amplatzer muscular VSD occluder was deployed across the PDA. PAP fell from 68 to 35 mmHg and PVR fell from 9.4 to 4.88 Wood units. Post-closure, the patient reported marked improvement in dyspnea. Six months later she underwent repeat right heart catheterization that demonstrated a PAP of 39 mmHg.

Conclusion: ACC/AHA guidelines recommend against PDA closure if PH is severe and irreversible. If the PDA is too large for balloon occlusion, vasodilator challenge may cause no significant decrease in PAP and PVR, leading to the false conclusion that PH is irreversible and PDA closure is contraindicated. This case highlights the importance of assessing shunt flow with vasodilator challenge in these patients, for an increase in flow suggests reversible PH and suitability for PDA closure.